

REMARKS

In the Office Action, the Examiner rejected Claims 1-12, 14-19 and 21-25, which are all of the pending claims, under 35 U.S.C. 10-3 as being unpatentable over U.S. Patent 5,767,842 (Korth, et al.) in view of U.S. Patent 6,407,679 (Evans, et al.).

Independent Claims 1, 4, 8, 9, 10, 14, 17 and 21 are being amended to better define the subject matters of these claims.

For the reason discussed below, Claims 1-12, 14-19 and 21-25 patentably distinguish over the prior art and are allowable. The Examiner is thus asked to reconsider and to withdraw the rejection of Claims 1-12, 14-19 and 21-25 under 35 U.S.C. 103, and to allow these claims.

There are a number of important features of this invention that are not shown in or suggested by the prior art. One such feature is that the present invention, as described in Claims 1, 4, 8, 9, 10, 14, 17 and 21, uses an invisible virtual keyboard.

In particular, Korth assumes that the user sees a virtual keyboard, either printed on a table or seen on a monitor. With the present invention, in contrast, the user does not see a virtual keyboard at all. The user may not even have a table in front of him or her. Because of this, in this invention, the typing processes are a set of gestures that imitate some typical typing movements but they are so vague that they require a statistical recognition process that interprets gestures, similar to the way a speech recognition machine interprets speech.

In the Office Action, the Examiner argued that Korth discloses a physically non-existent input device. There is, however, an important difference between a physically non-existent input device and an invisible virtual keyboard. With the present invention, the keyboard is not only not physical, but it is also an invisible virtual keyboard. Korth, in contrast, clearly teaches the use of a visible virtual input device, for instance as shown in Figure 1 of Korth.

Another important feature of the present invention that is not shown in or suggested by the prior art relates to the way in which probabilities are assigned. In a general sense, with the present invention, probabilities are assigned on a keystroke-by-keystroke bases, while in Evans, et al, probabilities are assigned to sentences or to partial sentences.

Evans, et al. describes a procedure for converting finger movement into text. With the method and system disclosed in Evans, et al, each finger gesture is assigned a number, a series of numbers is formed, and then a dictionary is used to match that series to one or more possible words. After a sentence is completed, all possible sentences are formed, a probability is assigned to each sentence possibility, and the most probable sentence is selected.

This is not how the present invention operates. With this invention, for example, as discussed in detail in the present application, one keystroke might be either a G or an H, probabilities are assigned to each of these possible keys, and after all probabilities are assigned to the keystrokes of a word, the probabilities are integrated to identify a word. This is very different from the disclosure of Evans, et al.

With respect to this point, the Examiner cites column 8 of Evans, et al. A careful review of this portion of Evans, et al shows that Evans et al. teaches selecting words based on probabilities, but not assigning probabilities to individual keystrokes. Instead, as mentioned above, with the Evans, et al. procedure, each finger gesture is assigned a number – which is not a probability – and then a series of numbers is formed. A dictionary is used to match that series to one or more possible words; and after a sentence is completed, all possible sentences are formed, a probability is assigned to each sentence possibility, and the most probable sentence is selected. With the present invention, each word is identified on the basis of the probabilities assigned to the possible keys assigned to each of the gesture classes that make up that word.

Independent claims 1, 4, 8, 9, 10, 14, 17 and 21 are being amended to more clearly describe this difference between the present invention and the prior art. In particular, each of Claims 1, 8, 9, 10 and 17 indicates that the computer processes described in the claims, among other functions, classify the gestures or gesture images into classes, and associate each of the classes with one or more possible keys of the invisible keyboard. In addition, these computer processes assign a probability to each of the possible keys associated with each of these classes, and integrate the probabilities assigned to the possible keys to identify a word for a sequence of gestures.

Also, Claim 4 describes various modules for performing the above-described functions. In particular, the claim describes a classifier module that classifies the gestures into classes, an associator module for associating each of the classes with one or more possible keys, and an integrator module that integrates the probabilities assigned to the possible keys to identify a word for a sequence of gestures.

Claim 14 sets forth a producing step for classifying the gestures into classes, associating each of the classes with one or more possible keys, for each of the classes, assigning a probability to each of the possible keys, and integrating the probabilities assigned to the possible keys to identify a word for a sequence of gestures. Claim 21, which is directed to a typing system, includes analogous apparatus limitations.

The other references of record have been reviewed, and these other references, whether considered individually or in combination, are believed to be no more pertinent than Korth and Evans, et al.

Because of the above-discussed differences between Claims 1, 4, 8, 9, 10, 14, 17 and 21 and the prior art, and because of the advantages associated with those differences, these claims patentably distinguish over the prior art and are allowable. Claims 2 and 3 are dependent from Claim 1 and are allowable therewith; Claims 5, 6 and 7 are dependent from, and are allowable with, Claim 4; and Claims 11, 12, 22 and 23 are dependent from Claim 10 and are allowable therewith. Similarly, Claims 15 and 16 are dependent from, and are allowable with, Claim 14; Claims 18 and 19 are dependent from Claim 17 and are allowable therewith; and Claim 22 is dependent from, and is allowable with, Claim 21. The Examiner is, accordingly, asked to reconsider and to withdraw the rejection of Claims 1-12, 14-19 and 21-24 under 35 U.S.C. 103, and to allow these claims.

Every effort has been made to place this case in condition for allowance, a notice of which is requested. If the Examiner believes that a telephone conference with Applicants' Attorneys would be advantageous to the disposition of this case, the Examiner is asked to telephone the undersigned.

Respectfully submitted,

John S. Sensny
John S. Sensny
Registration No. 28,757
Attorney for Applicants

SCULLY, SCOTT, MURPHY & PRESSER
400 Garden City Plaza – Suite 300
Garden City, New York 11530
(516) 742-4343

JSS:jy